

FIGURE 1A

CTCGAGGACAGTGACCTGGGAGTGAGTACAAGGTGAGGCCACCACTCAGGGT  
GCCAGCTCCAAGCGGGTCACAGGGACGAGGGGCTGCGGCCATCAGGAGGCCCT  
GCACACACATCTGGGACACGCGCCCCCGAGGGCCAGTTCACCTCAGTGCGCCT  
CATTCTCCTGCACAAAAGCGCCCCCATCCTTTCTTCACAAGGCTTTCGTGGAAG  
CAGAGGCGTCGATGCCCAGTACCCTCTCCCTTTCCCAGGCAACGGGACCCCAA  
GTTTGCTGACTGGGACCACCAAGCCACGCATGCGTCAAGAGTGAGAGTCCGG  
GACCTAGGCAGGGGGCCCTGGGGTTGGGCCTGAGAGAGAAGAGAACCTCCCCC  
AGCACTCGGTGTGCATCGGTAGTGAAGGAGCCTCACCTGACCCCGCTGTTGC  
TCAATCGACTTCCCAAGAACAGAGAGAAAAGGGAACCTCCAGGGCGGCCCCG  
GCCTCCTGGGGGTTCCCAACCCCATTTTTAGCTGAAAGCACTGAGGCAGAGCTC  
CCCCTACCCAGGCTCCACTGCCCAGCACAGAAATAACAACCACGGTTACTGAT  
CATCTGGGAGCTGTCCAGGAATTC

0995975-092701

# Germ-line Locus

IL-2 inducible promoter fragment



RIGEL

FIGURE 1B

# Low energy DNA folding of the $S_{\epsilon}$ region

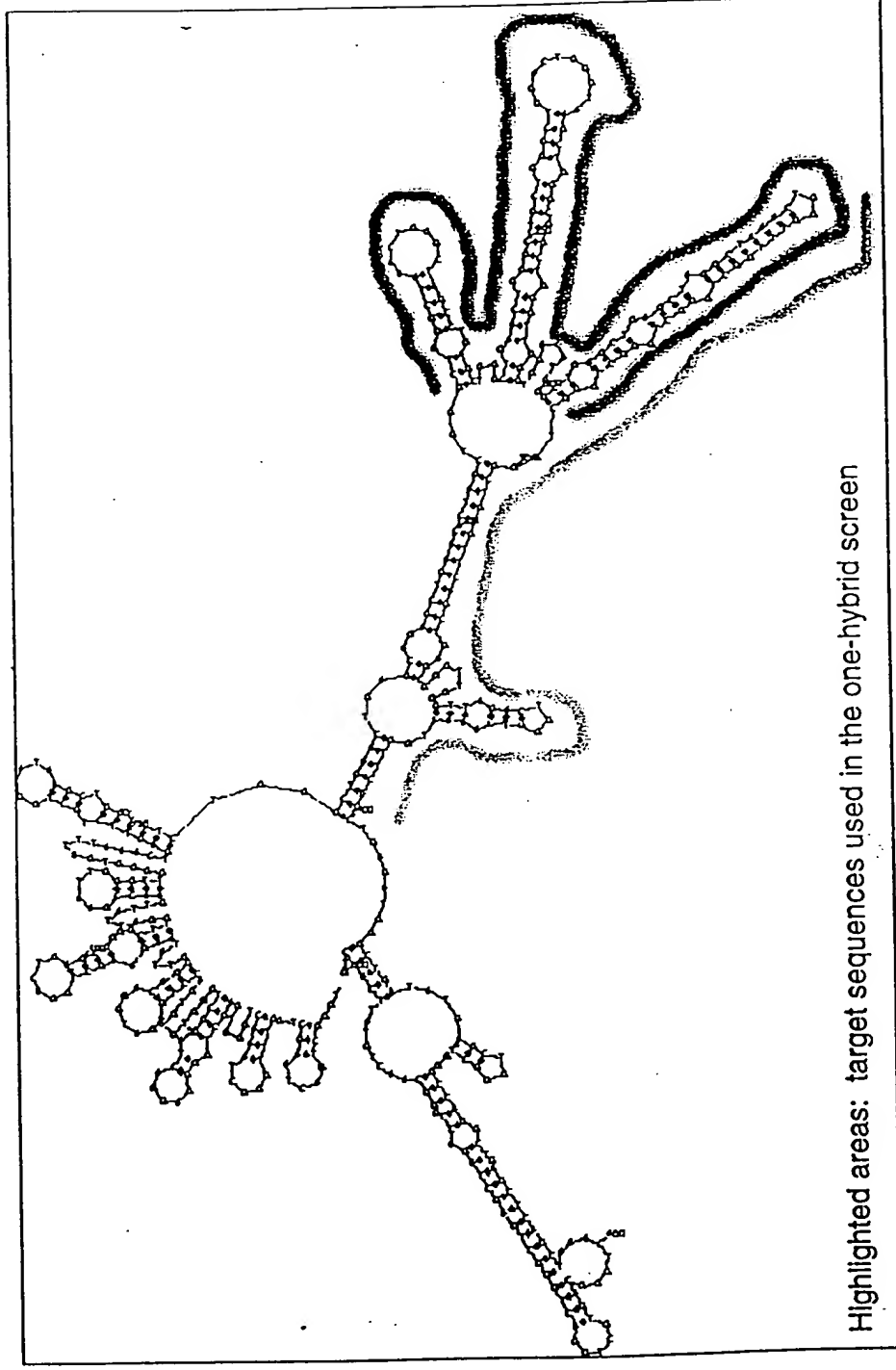


FIG 2A

## FIGURE 2B

1 GCTGGGCTAA ACTGGGCTAG CCTGAGCTGG GCTGAACTGG GCTGCTGGGC  
51 TGGACTGGGT AAGCTGGGCT GAGCTGGGTT GGGTGGAAAT GGGCTGAGCT  
101 GAGCTAGGCT AACTGGGTT TGGCTGGGCT GGGCTGGGCT GGG

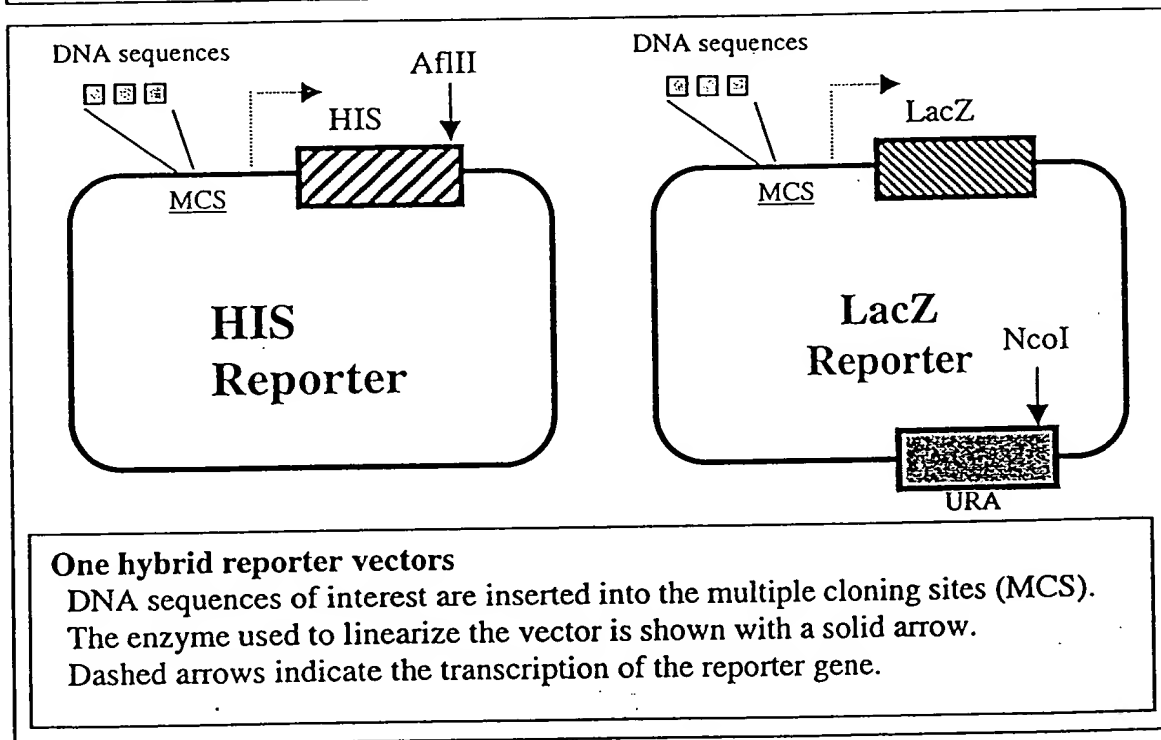
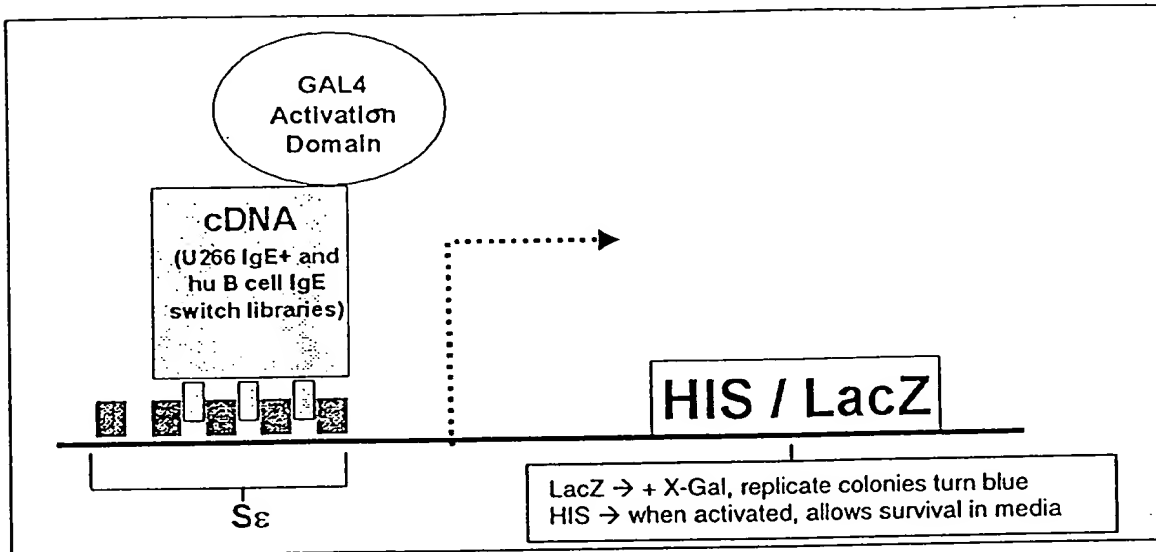
## FIGURE 2C

1 GGTTTGGCTG GGCTGGGCTG GGCTGGGCTG GGTCAGCTG AGCGGGTTGG  
51 GTTAGACTGG GTCAAACCTGG TTCAGC

099597-02201

FIG 3

# Appendix F Yeast One-Hybrid Screening



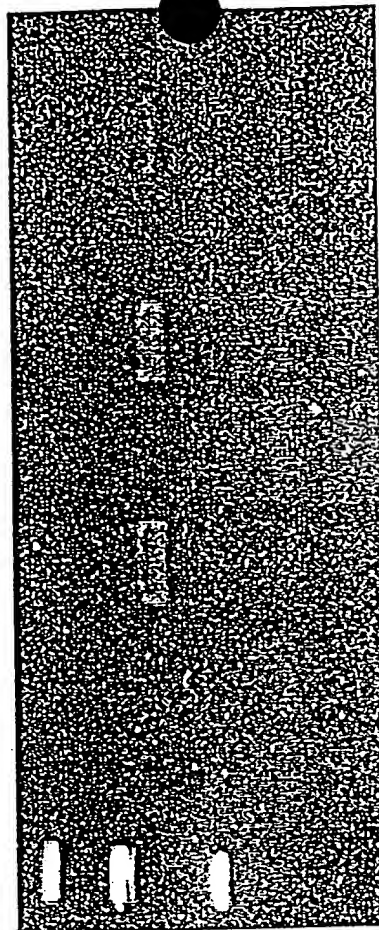
09065976-092704

FIG 4

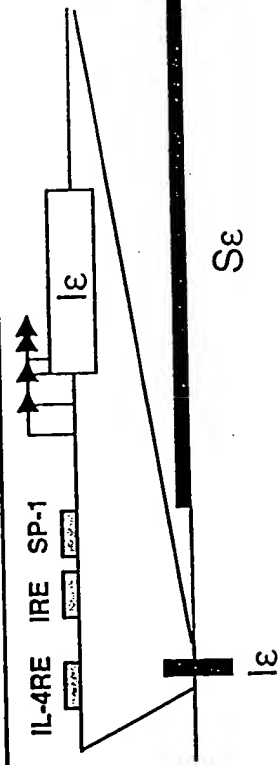
# IL-4 Induction of Germline $\epsilon$ mRNA in the IgM+ B cell lines: CA-46, MC-116 and DND39

Cells were incubated for 48 hrs in 300 U/ml of h-IL-4. RT-PCR was performed using primers specific for the germline  $\epsilon$  exon and the 5'-end of the  $\epsilon$  CH1 exon (predicted size ~ 200 bp).

DND39 + IL-4  
DND39 - IL-4  
MC-116 + IL-4  
MC-116 - IL-4  
CA-46 + IL-4  
CA-46 - IL-4  
Neg cont.

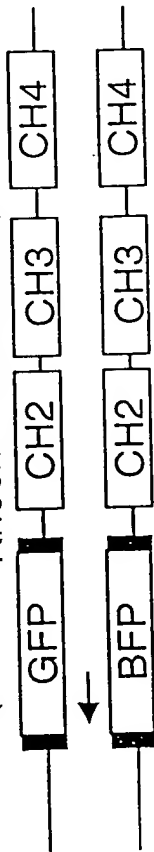


# Approaches to generate germline $\epsilon$ promoter knock-in reporter cell lines



IL-4 inducible IgM+ B cell lines are transfected. Under the influence of IL-4, GFP and/or BFP positive clones are isolated by FACS. Homologous recombination can be confirmed by PCR and/or Southern blot hybridization.

Knock-in constructs



IL-4 Inducible IgM+ B cell lines are transfected and selected with G418. Survivors are sorted for the lack of 3' BFP expression (deleted during homologous recombination). RT-PCR is performed to confirm homologous recombination. Those clones are transfected with *cre* to remove the neomycin resistance gene.

IL-4 RE, IL-4 responsive element  
IRE, interferon responsive element  
SP-1, SP-1 binding site  
Iε, non-translated exon  
Sε, switch region of ε  
GFP, green fluorescent protein  
BFP, blue fluorescent protein  
CH1,2,3,4, constant region domain exons

Constitutive Promoter

SV40 promoter

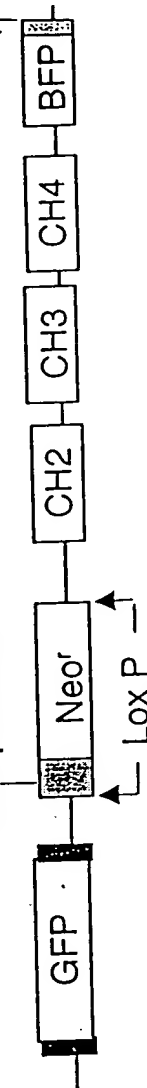
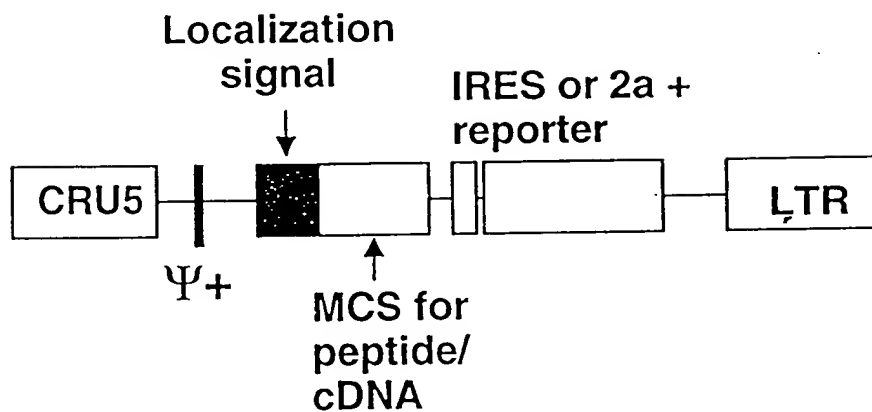


FIG 6

## Appendix I

### Rigel Base Vector



All components are cassetted for flexibility

CRU5, modified LTR  
 LTR, long terminal repeat  
 Ψ+, packaging signal  
 Localization signal: nuclear, cell membrane, granular  
 MCS, multiple cloning site  
 IRES, internal ribosome entry site  
 2a, self-cleaving peptide



**SECRET**

## Protocol for Transfection of Phoenix Cells and Infection of Nonadherent Target Cells

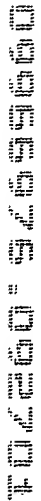
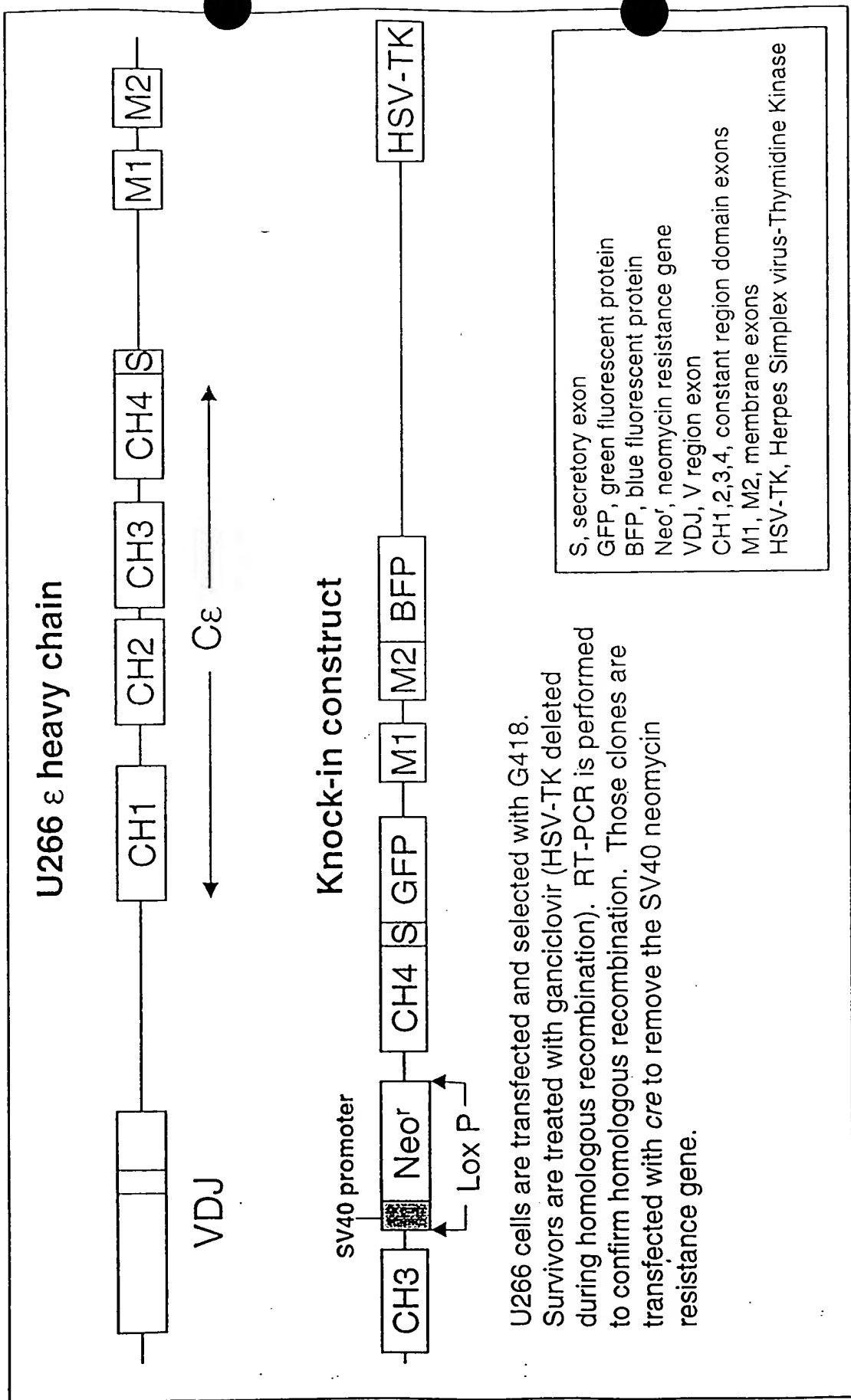


FIG 8

FOCUS 3469960

# $\epsilon$ heavy chain GFP/BFP knock-in cell line

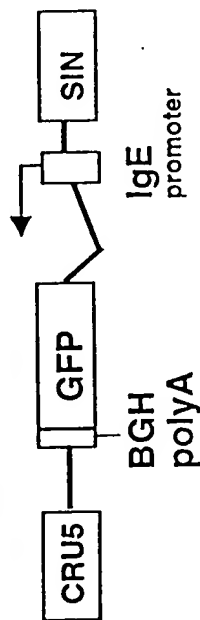


U266 cells are transfected and selected with G418. Survivors are treated with ganciclovir (HSV-TK deleted during homologous recombination). RT-PCR is performed to confirm homologous recombination. Those clones are transfected with *cre* to remove the SV40 neomycin resistance gene.

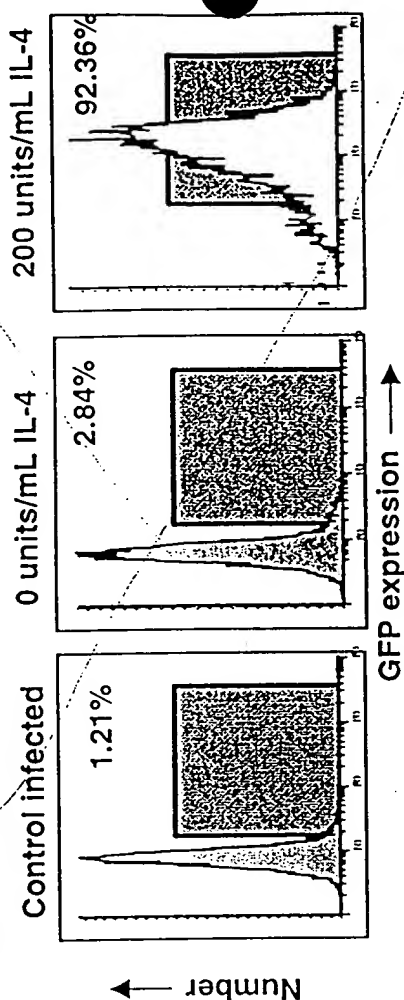
102250-925659

## IL-4 Inducible $\epsilon$ Promoter Reporter Cell Line

### Reporter construct

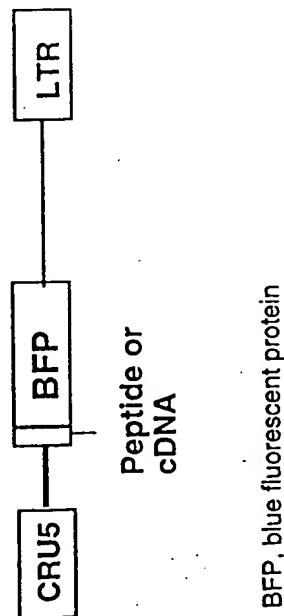


### IL-4 induced reporter

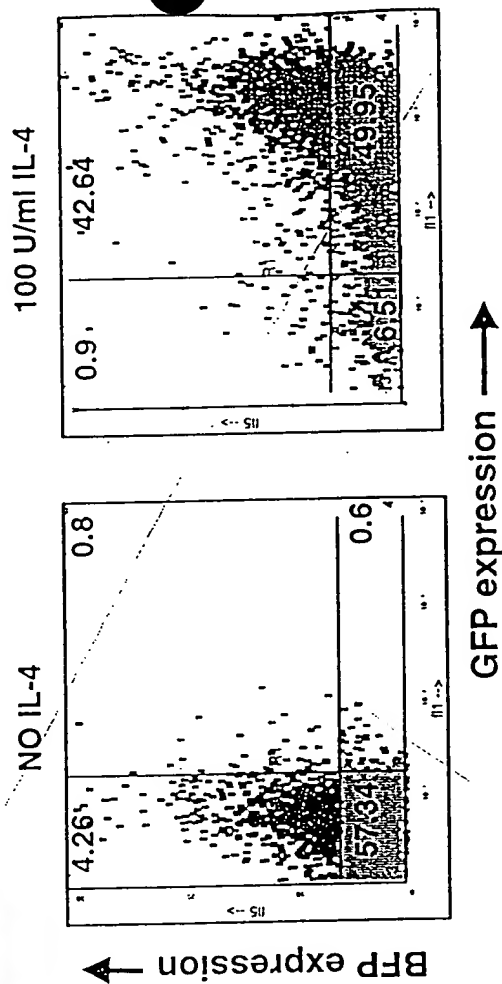


## Reporter Line Infected with BFP Construct

### Library construct

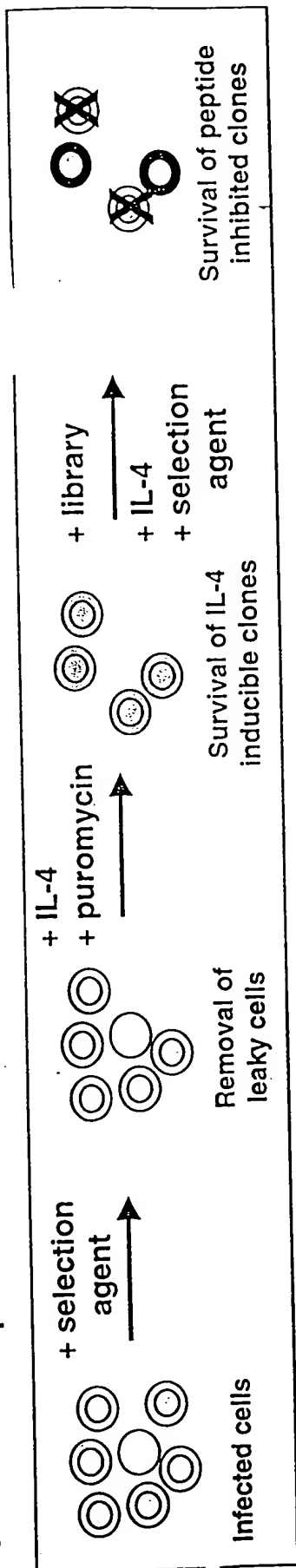


### FACS profile of cells with both reporter and peptide library

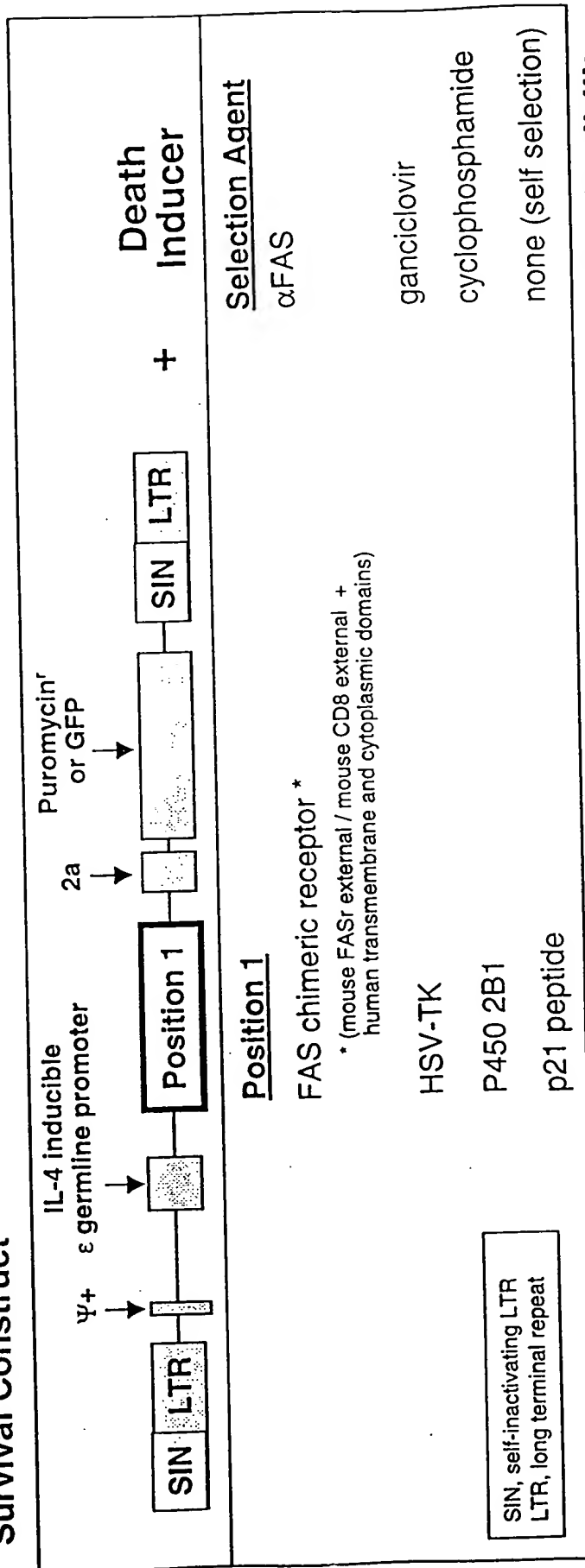


## Appendix C

## Screen for Peptide Inhibitors of the Germline $\epsilon$ Promoter



## Survival Construct



All components are cassetted for flexibility

## Appendix D

# FIGURE 11A-1

1-845 CMV promoter/R/U5 5' LTR  
 1322 GAG ATG-ATC mutation  
 850-2100 extended  $\psi$  region  
 2146-2173 two Bstx1 peptide cloning sites  
 2205-2723 ECMV IRES (cloned as EcoR1/MscI fragment from  
 pCITE-4a [Novagen])  
 2746-3465 GFP coding region  
 3522-4115 3' LTR  
 4122-6210 pGEM backbone (pUC origin, ampR)

ATCACGAGGCCCTTTTCGTCTTCAAGAACAGCTTTGCTCTTAGGAGTTTCCTAATACATCC  
 CAAACTCAAATATATAAAGCATTTGACTTGTCTATGCCCTAGTTATTAATAGTAATCAA  
 TTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCGCGGTTACATAACTTACGGTAA  
 ATGGCCCGCCTGGCTGACCGCCCAACGACCCCGCCCATTTGACGTCAATAATGACGTATG  
 TTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGT  
 AAAGTGGCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTATTGACG  
 TCAATGACGGTAAATGGCCCGCCTGGCATTATGCCAGTACATGACCTTATGGGACTTTC  
 CTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTTGGC  
 AGTACATCAATGGGCGTGGATAGCGGTTTTGACTCACGGGGATTTCGAAGTCTCCACCCCA  
 TTGACGTCAATGGGAGTTTTGTTTTGGCACCAAAATCAACGGGACTTTCCAAAATGTCGTA  
 ACAACTCCGCCCCATTGACGCAAAATGGGCGGTAGGCATGTACGGTGGGAGGTCTATATAA  
 GCAGAGCTCAATAAAAGAGCCACAACCCCTCACTCGGGGCGCCAGTCCCTCCGATTGACT  
 GAGTCGCCCCGGGTACCCGTGTATCCAATAAACCCCTCTTGAGTTGCATCCGACTTGTGGT  
 CTCGCTGTTCCCTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTT  
 CATTTGGGGGCTCGTCCGGGATCGGGAGACCCCTGCCAGGGACCACCGACCCACCACCG  
 GGAGGTAAGCTGGCCAGCAACTTATCTGTGTCTGTCCGATTGTCTAGTGTCTATGACTGA  
 TTTTATGCGCCTGCGTCCGTACTAGTTAGCTAACTAGCTCTGTATCTGGCGGACCCGTGG  
 TGGAACTGACGAGTTCGGAACACCCGGCCGCAACCCTGGGAGACGTCCCAGGGACTTCGG  
 GGGCCGTTTTTGTGGCCGACCTGAGTCCAAAATCCCGATCGTTTTTGGACTCTTTGGTG  
 CACCCCCCTTAGAGGAGGGATATGTGGTTCTGGTAGGAGACGAGAACCTAAAACAGTTCC  
 CGCCTCCGTCTGAATTTTTGCTTTTCGGTTTGGGACCGAAGCCGCGCGCGCTCTGTCT  
 GCTGCAGCATCGTTCTGTGTGTCTCTGTCTGACTGTGTTTCTGTATTTGTCTGAAAATA  
 TCGGCCCCGGGCCAGACTGTTACCACTCCCTTAAGTTTGACCTTAGGTCAGTGGAAAGATG  
 TCGAGCGGATCGCTCACAACCAGTCGGTAGATGTCAAGAAGAGACGTTGGGTTACCTTCT  
 GCTCTGCAGAAATGGCCAACCTTTAACGTCGGATGGCCGCGAGACGGCACCTTTAACCGAG  
 ACCTCATCACCCAGGTAAAGATCAAGGTCTTTTACCTGGCCCGCATGGACACCCAGACC  
 AGGTCCCCTACATCGTGACCTGGGAAGCCTTGGCTTTTGACCCCCCTCCCTGGGTCAAGC  
 CCTTTGTACACCCTAAGCCTCCGCCTCCTCTTCCCTCCATCCGCCCCGTCTCTCCCCCTTG  
 AACCTCCTCGTTCGACCCCGCCTCGATCCTCCCTTTATCCAGCCCTCACTCCTTCTCTAG  
 GCGCCCCCATATGGCCATATGAGATCTTATATGGGGCACCCCCGCCCCCTTGTAAGTTC  
 CTGACCCTGACATGACAAGAGTTACTAACAGCCCCCTCTCTCCAAGCTCACTTACAGGCTC  
 TCTACTTAGTCCAGCACGAAGTCTGGAGACCTCTGGCGGACAGCTACCAAGAACAAGTGG  
 ACCGACCGGTGGTACCTCACCTTACCGAGTCGGCGACACAGTGTGGGTCCGCCGACACC  
 AGACTAAGAACCTAGAACCTCGCTGGAAAGGACCTTACACAGTCCTGCTGACCACCCCA  
 CCGCCCTCAAAGTAGACGGCATCGCGCTTGGATACACGCCGCCACGTGAAGGCTGCCGA  
 CCGCGGGGTGGACCATCCTCTAGACTGCCGGATCTCGAGGGATCCACCACCATGGACCC  
 CCATTAAATTGGAATTCCTGCAGCCCCGGGGGATCCACTAGTTCTAGAGCGAATTAATTCC

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FIGURE 11A-2

GGTTATTTTCCACCATATTGCCGCTCTTTTGGAATGTGAGGGCCCGGAAACCTGGCCCTG  
TCTTCTTGACGAGCATTCCCTAGGGGTCTTTCCCTCTCGCCAAAGGAATGCAAGGTCTGT  
TGAATGTCGTGAAGGAAGCAGTTCTCTGGAAGCTTCTTGAAGACAACAGTCTGTAG  
CGACCCTTTGACGGCAGCGGAACCCCCACCTGGCGACAGGTGCCTCTGCGGCCAAAAGC  
CACGTGTATAAGATACACCTGCAAAGGCGGCACAACCCAGTGCCACGTTGTGAGTTGGA  
TAGTTGTGGAAGAGTCAAATGGCTCTCCTCAAGCGTATTCAACAAGGGGCTGAAGGATG  
CCCAGAAGGTACCCCATTTGTATGGGATCTGATCTGGGGCCTCGGTGCACATGCTTTACAT  
GTGTTTAGTTCGAGGTTAAAAAAGTCTAGGCCCCCGAACCACGGGGACGTGGTTTTCTCT  
TTGAAAAACACGATGATAATATGGGGGATCCACCGGTGCGCCACCATGGTGAGCAAGGGCG  
AGGAGCTGTTACCGGGGTGGTGCCCATCCTGGTTCGAGCTGGACGGCGACGTAAACGGCC  
ACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGA  
AGTTCATCTGCACCACCGGCAAGCTGCCCCGTGCCCTGGCCCCACCTCGTGACCACCTGA  
CCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCACATGAAGCAGCAGACTTCTTCA  
AGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCA  
ACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCTGGTGAACCGCATCGAGC  
TGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAAC  
ACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAAC  
TCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTGCGCGACCACTACCAGCAGA  
ACACCCCATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTACCTGAGCACCCAGT  
CCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCTGCTGGAGTTCGTGA  
CCGCCGCCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAAGCGGCCGCTCGACGA  
TAAAATAAAAGATTTTATTAGTCTCCAGAAAAAGGGGGGAATGAAAGACCCACCTGTA  
GGTTTGGCAAGCTAGCTTAAGTAACGCCATTTTGCAAGGCATGGAAAAATACATAACTGA  
GAATAGAGAAGTTCAGATCAAGGTCAGGAACAGATGGAACAGCTGAATATGGGCCAAACA  
GGATATCTGTGGTAAGCAGTTCTTGCCCCGGCTCAGGGCCAAGAACAGATGGAACAGCTG  
AATATGGGCCAAACAGGATATCTGTGGTAAGCAGTTCTTGCCCCGGCTCAGGGCCAAGAA  
CAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTTTCTAGAGAACCATCAGATGTTTC  
CAGGGTGCCCCAAGGACCTGAAATGACCCTGTGCCTTATTTGAACATAACCAATCAGTTCG  
CTTCTCGCTTCTGTTTCGCGCGCTTCTGCTCCCCGAGCTCAATAAAAGAGCCACAACCCC  
TCACTCGGGGCGCCAGTCCCTCCGATTGACTGAGTCGCCCCGGGTACCCGTGTATCCAATA  
ACCCTCTTGCAAGTTGCATCCGACTTGTGGTCTCGCTGTTTCTTGGGAGGGTCTCCTCTGA  
GTGATTGACTACCCGTGACGCGGGGTCTTTTCAATTTCCGACTTGTGGTCTCGCTGCCTTGG  
GAGGGTCTCCTCTGAGTGATTGACTACCCGTGACGCGGGGTCTTTCATGACGATGTAT  
CAAAATTAATTTGGTTTTTTTTTCTTAAGTATTTACATTAAATGGCCATAGTTGCATTAAT  
GAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCGTATTGGCGCTCTTCCGCTTCCTCGCT  
CACTGACTCGCTGCGCTCGGTGCTTTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGC  
GGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAGG  
CCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCG  
CCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGG  
ACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGAC  
CCTGCCGCTTACCGGATACCTGTCCGCTTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCA  
TAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGCTTCCGCTCCAAGCTGGGCTGTGT  
GCACGAACCCCCCGTTTACGCCCCGACCGCTGCGCCTTATCCGGTAACATATCGTCTTGAGTC  
CAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAG  
AGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACAC  
TAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGT  
TGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTTTGTGTGCAA  
GCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGG  
GTCTGACGCTCAGTGGAACGAAACTCACGTTAAGGGATTTTGGTTCATGAGATTATCAAA  
AAGGATCTTACCTAGATCCTTTTTAAATTAATAAAGTGTGCGCAAATCAATCTAAAG  
TATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTC  
AGCGATCTGTCTATTTTCGTTTATCCATAGTTGCCTGACTCCCCGTGCTGTAGATAACTAC  
GATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTC  
ACCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGG

FIGURE 11A-3

TCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAG  
TAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTC  
ACGCTCGTCGTTTGGTATGGCTTCATTACAGCTCCGGTTCCCAACGATCAAGGCGAGTTAC  
ATGATCCCCCATGTTGTGCAAAAAGCGGTTAGCTCCTTCGGTCTTCCGATCGTTGTCTAG  
AAGTAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTAC  
TGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTG  
AGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCCGGCGTCAACACGGGATAATACCGC  
GCCACATAGCAGAACTTTAAAAGTGCTCATCATTTGGAAAACGTTCTTTCGGGGCGAAACT  
CTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTG  
ATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAA  
TGCCGCAAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTT  
TCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATG  
TATTTAGAAAAATAAACAAATAGGGGTTCGCGCACATTTTC

FIGURE 11B-1

1-845 CMVpormoter/R/U5 5' LTR  
1322 GAG ATG-ATC mutation  
850-2100 extended  $\square$  region  
2151-2865 GFP coding region  
2866-2894 GGS SGGG linker  
2895-2952 FMDV 2a cleavage sequence  
2953-3004 Bstx1/Bstx1/Hind3/Hpa1/Sal1/Not1 polylinker  
3052-3645 3' LTR  
3652-5715 pGEM backbone (pUC origin, ampR)

ATCACGAGGCCCTTTCGTCTTCAAGAACAGCTTTGCTCTTAGGAGTTTQCTAATACATC  
CCAAACTCAAATATATAAAGCATTTGACTTGTTCTATGCCCTAGTTATTAATAGTAATC  
AATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCCGCGTTACATAACTTACGG  
TAAATGGCCCGCCTGGCTGACCGCCCAACGACCCCGCCCATTGACGTCAATAATGACG  
TATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTT  
ACGGTAAACTGCCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTA  
TTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTACATGACCTTATGG  
GACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCG  
GTTTTGGCAGTACATCAATGGGCGTGATAGCGGTTTGACTCACGGGGATTTCCAAGTC  
TCCACCCCATTTGACGTCAATGGGAGTTTGTTTTGGCACCAAAATCAACGGGACTTTCCA  
AAATGTCGTAACAACCTCCGCCCCATTGACGCAAATGGGCGGTAGGCATGTACGGTGGGA  
GGTCTATATAAGCAGAGCTCAATAAAGAGCCACAAACCCCTCACTCGGGGCGCCAGTC  
CTCCGATTGACTGAGTCGCCCCGGGTACCCGTGTATCCAATAAACCCCTCTTGCAAGTTGCA  
TCCGACTTGTGGTCTCGCTGTTCCCTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGT  
CAGCGGGGGTCTTTCATTTGGGGGCTCGTCCGGGATCGGGAGACCCCTGCCCAGGGACC  
ACCGACCCACCACCGGGAGGTAAGCTGGCCAGCAACTTATCTGTGTCTGTCCGATTGTC  
TAGTGTCTATGACTGATTTTATGCGCCTGCGTCGGTACTAGTTAGCTAACTAGCTCTGT  
ATCTGGCGGACCCGTGGTGGAAGTACGAGTTCGGAACACCCGGCCGCAACCCCTGGGAG



FIGURE 11B-2

ACGTCCTCCAGGGACTTTCGGGGGCGCTTTTGTGGCCCCGACCTGAGTCCAAAAATCCCGAT  
CGTTTTTGGACTCTTTGGGTGCACCCCCCTTAGAGGAGGGATATGTGGTTCTGGTAGGAGA  
CGAGAACCTAAAACAGTTCCCGCCTCCGTCTGAATTTTTGTCTTCGGTTTGGGACCGAA  
GCCGCGCCGCGCGTCTTGTCTGCTGCAGCATCGTTCTGTGTTGTCTCTGTCTGACTGTG  
TTTCTGTATTTGTCTGAAAATATCGGCCCGGGCCAGACTGTTACCACTCCCTTAAGTTT  
GACCTTAGGTCACTGGAAGATGTGAGCGGATCGCTCACACCAGTCGGTAGATGTCA  
AGAAGAGACGTTGGGTACCTTCTGCTCTGCAGAAATGGCCAACCTTTAACGTCGGATGG  
CCGCGAGACGGCACCTTTAACCGAGACCTCATCACCCAGGTTAAGATCAAGGTCTTTTC  
ACCTGGCCCGCATGGACACCCAGACCAGGTCCCCTACATCGTGACCTGGGAAGCCTTGG  
CTTTTGACCCCCCTCCCTGGGTCAAGCCCTTTGTACACCCTAAGCCTCCGCCTCCTCTT  
CCTCCATCCGCCCCGTCTCTCCCCCTTGAACCTCCTCGTTCGACCCCGCCTCGATCCTC  
CCTTTATCCAGCCCTCACTCCTTCTCTAGGCGCCCCCATATGGCCATATGAGATCTTAT  
ATGGGGCACCCCCGCCCTTGTAAACTTCCCTGACCCTGACATGACAAGAGTTACTAAC  
AGCCCCCTCTCTCCAAGCTCACTTACAGGCTCTCTACTTAGTCCAGCACGAAGTCTGGAG  
ACCTCTGGCGGCAGCCTACCAAGAACAACCTGGACCGACCGGTGGTACCTCACCTTACC  
GAGTCGGCGACACAGTGTGGGTCCGCCGACACCAGACTAAGAACCTAGAACCTCGCTGG  
AAAGGACCTTACACAGTCTGTGACCACCCCCACCGCCCTCAAAGTAGACGGCATCGC  
AGCTTGGATACACGCCGCCACGTGAAGGCTGCCGACCCCGGGGGTGGACCATCCTCTA  
GACTGCCGGATCTCGAGGGATCCACCATGGTGAGCAAGGGCGAGGAGCTGTTACCGGG  
GTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTC  
CGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCA  
CCGGCAAGCTGCCCGTGCCCTGGCCCCACCTCGTGACCACCTGACCTACGGCGTGCGAG  
TGCTTCAGCCGCTACCCCCGACCACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCC  
CGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCC  
GCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATC  
GACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACCTACAACAGCCA  
CAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACCTCAAGATCC  
GCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCC  
ATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTACCTGAGCACCCAGTCCGCCCT  
GAGCAAAGACCCCCAACGAGAAGCGCGATCACATGGTCCCTGCTGGAGTTCGTGACCGCCG  
CCGGGATCACTCTCGGCATGGACGAGCTGTACAAGGAATTCGGAGGTGGCAGCGGTGGC  
GGTCAGCTGTTGAATTTTGACCTTCTTAAACTTGCGGGAGACGTGAGTCCAACCCTGG  
GCCACCACCACCATGGAAGCTTCCATTAAATTGGTTAACGTCGACGCGGCCGCTCGAC  
GATAAAATAAAAGATTTTATTTAGTCTCCAGAAAAAGGGGGGAATGAAAGACCCACCT  
GTAGGTTTGGCAAGCTAGCTTAAGTAACGCCATTTTGGCAAGGCATGGAATAACATAA  
CTGAGAATAGAGAAGTTCAGATCAAGGTCAGGAACAGATGGAACAGCTGAATATGGGCC  
AAACAGGATATCTGTGGTAAGCAGTTCCCTGCCCCGGCTCAGGGCCAAGAACAGATGGAA  
CAGCTGAATATGGGCCAAACAGGATATCTGTGGTAAGCAGTTCCCTGCCCCGGCTCAGGG  
CCAAGAACAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGTTTCTAGAGAACCATCA  
GATGTTTTCCAGGGTGCCCCAAGGACCTGAAATGACCTGTGCCTTATTTGAACTAACCA  
ATCAGTTCGCTTCTCGCTTCTGTTTCGCGCGCTTCTGCTCCCCGAGCTCAATAAAAGAGC  
CCACAACCCCTCACTCGGGGCGCCAGTCCCTCCGATTGACTGAGTCGCCCCGGGTACCCGT  
GTATCCAATAAACCCCTCTTGAGTTGCATCCGACTTGTGGTCTCGCTGTTCCCTTGGGAG  
GGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTTTATTTCCGACTTGTGGT  
CTCGCTGCCCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTCA  
CATGCAGCATGTATCAAAATTAATTTGGTTTTTTTTTCTTAAGTATTTACATTAAATGGC  
CATAGTTGCATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCGTATTGGCGCT

FIGURE 11B-3

CTTCCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTCGTTTCGGCTGCGGCGAGCGGTA  
TCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAA  
GAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGG  
CGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAG  
AGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCT  
CGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTT  
CGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTC  
GTTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTT  
ATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAG  
CAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTG  
AAGTGGTGGCCTAACTACGGCTACACTAGAAAGGACAGTATTTGGTATCTGCGCTCTGCT  
GAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCG  
CTGGTAGCGGTGGTTTTTTTTGTTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCT  
CAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACG  
TTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATT  
AAAAATGAAGTTTGCGCAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGT  
TACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCAT  
AGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCC  
CCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATA  
AACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCTCCAT  
CCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGC  
GCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGCTCGTCGTTTGGTATGGCT  
TCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAA  
AAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCAGTGT  
TATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTTCATGCCATCCGTAAGA  
TGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGCGGCG  
ACCGAGTTGCTCTTGCCCGGCGTCAACACGGGATAATACCGCGCCACATAGCAGAACTT  
TAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCG  
CTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTT  
TACTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGG  
GAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTTCAATATTATTGA  
AGCATTTATCAGGGTTATTGTCTCATGACATTAACCTATAAAAATAGGCGT

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[illegible]

ATCACGAGGCCCTTTTCGCTCTTCAAGAACAGCTTTGCTCTTAGGAGTTTCCATAATACATCCCAAACTCAAAT  
ATATAAAGCATTGTACTTGTCTTATGCCCTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAG  
CCATATATGAGATTGTCGCGTTACATAAATTACGGTAAATGGCCCGCTGGCTGACCGCCCAACGACCCCG  
CCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGG  
TGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTATT  
GACGTCAATGACGGTAAATGGCCCGCTGGCATTATGCCAGTACATGACCTTATGGGACTTTCCCTACTTG  
GCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTTGGCAGTACATCAATGGGCGTG  
GATAGCGGTTTTGACTCACGGGGATTTCCAAGTCTCCACCCCATTGACGTCAATGGGAGTTTGTTTTGGCAC  
CAAATCAACGGGACTTTCCAAAATGTCTGTAACAACTCCGCCCCATTGACGCAAAATGGGCGGTAGGCATGT  
ACGGTGGGAGGTCTATATAAGCAGAGCTCAATAAAAGAGCCACAACCCCTCACTCGGGGCGCCAGTCCCTC  
CGATTGACTGAGTCGCGCGGGTACCCGTGTATCCAATAAAACCCCTCTTGCAAGTTGCATCCGACTTGTGGTCT  
CGCTGTTCCCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGCGGGGGTCTTTCATTTGGGGGCTC  
GTCCGGGATCGGGAGACCCCTGCCCAGGGACCACCGACCCACCACGGGAGGTAAGCTGGCCAGCAACTTA  
TCTGTGTCGTGCCGATTGTCTAGTGTCTATGACTGATTTTATGCGCCTGCGTCGGTACTAGTTAGCTAACT  
AGCTCTGTATCTGGCGGACCCGTGGTGGAAGTACGAGTTTCGGAACACCCGGCCGCAACCCCTGGGAGACGT  
CCCAGGGACTTCGGGGGGCGTTTTTGTGGCCCGACCTGAGTCCAAAAATCCCGATCGTTTTGGAGCTCTTTG  
GTGCACCCCCCTTAGAGGAGGGATATGTGGTCTCTGGTAGGAGCAGAGAACCTAAAACAGTTCCCGCCTCCG  
TCTGAATTTTTCGTTTTCGTTTTGGGACCGAAGCCCGCGCGCGCTTGTCTGCTGCAGCATCGTTCTGTG  
TTGCTCTCTGTCTGACTGTGTTTTCTGTATTTGTCTGAAAAATATCGGCCCGGGCCAGACTGTTACCCTCCCT  
TAAGTTTACCTTAGGTCACTGGAAGATGTCTGAGCGGATCGCTCACAACCAGTCGGTAGATGTCAAGAAG  
AGACGTTGGGTTACCTTCTGCTCTGCAGAATGGCCAACCTTTAACGTCGGATGGCCGCGAGACGGCACCTT  
TAACCGAGACCTCATCACCCAGGTTAAGATCAAGGTCTTTTCACCTGGCCCGCATGGACACCCAGACCAGG  
TCCCTTACATCGTGACCTGGGAAGCCTTGGCTTTTGACCCCCCTCCCTGGGTCAAGCCCTTTGTACACCT  
AAGCCTCCGCTCCTCTTCTCCATCCGCCCCGTCTCTCCCCCTTGAACCTCCTCGTTTCGACCCCGCCTCG  
ATCCTCCCTTTATCCAGCCCTCACTCCTTCTCTAGGCGCCCCCATATGGCCATATGAGATCTTATATGGGG  
CACCCCGCCCCCTTGTAACCTTCCCTGACCTGACATGACAAGAGTTACTAACAGCCCCCTCTCTCCAAGCT  
CACTTACAGGCTCTCTACTTAGTCCAGCACGAAGTCTGGAGACCTCTGGCGGCAGCCTACCAAGAACAAC  
GGACCGACCGGTGGTACCTCACCTTACCGAGTCGGCGACACAGTGTGGGTCCGCCGACACCAGACTAAGA  
ACCTAGAACCTCGCTGGAAAGGACCTTACACAGTCCTGCTGACCACCCCCACCGCCCTCAAAGTAGACGGC  
ATCGCAGCTTGGATACACGCCGCCACGTGAAGGCTGCCGACCCCGGGGTGGACCATCCTCTAGACTGCC  
GGATCTCGAGGGATCCACCACCATGGACCCCATTAATTTGGAATTCGGGGCCCAAGCTTTGTTAACGTGC  
ACGCGGCCCGCGCTCGACGATAAAAATAAAGATTTTATTTAGTCTCCAGAAAAAGGGGGAATGAAAGACCC  
CACCTGTAGGTTTGGCAAGCTAGCTTAAGTAACGCCATTGTGCAAGGCATGGAACAAATACATAAGTAGAA  
TAGAGAAGTTTTCAGATCAAGGTACAGGAACAGATGGAACAGCTGAATATGGGGCCAAACAGGATATCTGTGGTA  
AGCAGTTCTTCCCGCGCTCAGGGCCAAGAACAGATGGAACAGCTGAATATGGGGCCAAACAGGATATCTGTG  
GGTAAGCAGTTCTTCCCGCGCTCAGGGCCAAGAACAGATGGTCCCCAGATGCGGTCCAGCCCTCAGCAGT  
TTCTAGAGAATTCATCAGATGTTTTCCAGGGTGCCCCAAGGACCTGAAATGACCCTGTGCCTTATTTGAACTA  
ACCAATCAGTTTCGCTTCTCGCTTCTGTTCGCGCGCTTCTGTCTCCCGAGCTCAATAAAAGAGCCACAACC  
CCTCACTCGGGGCGCCAGTCTCCGATTGACTGAGTCGCGCGGGTACCCGTGTATCCAATAAACCCCTCTTG

FIGURE 11C-2

CAGTTGCATCCGACTTGTGGTCTCGCTGTTCCCTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGTCAGC  
 GGGGGTCTTTTCATTTCCGACTTGTGGTCTCGCTGCCTTGGGAGGGTCTCCTCTGAGTGATTGACTACCCGT  
 CAGCGGGGGTCTTCACATGCAGCATGTATCAAAATTAATTTGGTTTTTTTTCTTAAGTATTTACATTAAAT  
 GGCCATAGTTGCATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCCTATTGGCGCTCTTCCGCTT  
 CCTCGCTCACTGACTCGCTGCGCTCGGTGCTTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTA  
 ATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAG  
 GAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATC  
 GACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCC  
 CTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCTTTCCTCCCTTCGGGAAGCGT  
 GGGCGTTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCCGGTGTAGGTGCTTCGCTCCAAGCTGGGCTGTG  
 TGCACGAACCCCCCGTTACGCCCAGCGCTGCGCTTATCCGGTAACTATCGCTCTGAGTCCAACCCGCTA  
 AGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGC  
 TACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGC  
 TGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAAACAAACCACCGCTGGTAGCGGT  
 GGTTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTC  
 TACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGA  
 TCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTGCGCAATCAATCTAAAGTATATATGAGTAAACT  
 TGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCAT  
 AGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAA  
 TGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAG  
 CGCAGAAGTGCTCCTGCAACTTTATCCGCTCCATCCAGTCTATTAATTGTTGCGGGAAGCTAGAGTAAG  
 TAGTTCCGCGAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGCTCGTCTGT  
 TTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAA  
 AAAGCGGTTAGCTCCTTCGGTCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCGAGTGTATCACTCATGGT  
 TATGGCAGCACTGCATAATTCTCTTACTGTCTATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAAGTACT  
 CAACCAAGTCATTCTGAGAATAGTGATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAACACGGGATAAT  
 ACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACTCTCAAG  
 GATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACCTGATCTTCAGCATCTTTTA  
 CTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCGACA  
 CGGAAATGTTGAATACTCATACTCTTCTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCAT  
 GACATTAACCTATAAAAAATAGGCGT

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FIG 12A

(1) C12ScFas Survival construct

C12ScFas: epsilon-cFas(CD95)-Ires-Hygro-BGH PolyA put into C12s vector backwards so that no leaky transcription happens through the cmv promoter.

atcacgaggccctttcgtcttcaagaacagctttgctcttaggagtttctaatacatccaaactcaaatatataaagc  
atttgacttgttctatgcccagtttataatagtaataacacggttcattagttcatagcccatataggagttccg  
cgttacataacttacggttaaatggcccgctgggtgacgcccacgacccccgcccattgacgtcaataatgacgtatg  
ttcccatagtaacgccaataggagctttccattgacgtcaaatgggtggagttttacggttaactgcccacttggcagta  
catcaagtgtatcatatgccaagtacgccccctattgacgtcaaatgggtggagttttacggttaactgcccacttggcagta  
catgacctatgggactttcctacttggcagttacatcgtatttagtcacgtcattaccatgggtgagtgccgttttggc  
agttacatcaatgggctggatagcgggtttgactcacggggatttccaagtctccacccccattgacgtcaatgggagttt  
tttggcaccaaaatcaacgggactttccaaaatgtcgttaacaactccgccccattgacgcaaatgggctgtaggcattg  
acggtggggaggtctatataagcagagctcaataaaagagcccaacccccctactcggggcgccagtcctcagttgact  
gagtcgcccgggtaccggtgtatccaataaacctcttgcagttgcatccgacttgtggtctcgtgttcttgggaggg  
tctcctctgagtgattgactaccgctcagcgggggtcttctatttgggggctcgtccgggagtcgggagaccctgcccag  
ggaccaccgacccaccacgggaggttaagctggccagcaacttatctgtgtctgtccgattgtctagtgtctatgactga  
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caccggcgccgaacgtgggagacgtcccgagggtctggggcggttttggggccgacctgagtcacaaaatcccgga  
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cgcctcgtctgaatttttgccttctggttgggacccgaagcgcgcgcgcgtcttgcgtcgtcgcagcatcgttctgtgt  
tgtctctgtctgactgtgttctgtatttgcgtgaaaaataggccgggcccagactgttaccactcctcagttgac  
cttaggtcactggaagatgtcagcggatcgtcacaacacgtcggtagatgtcaagaagagacgttgggttaccttct  
gctctgcagaatggccaaacctttaacgtcggatggcgcgagacggcacctttaaccgagacctcatcaccaggttaag  
atcaaggtcttttaccctggcccgatggacacccagaccaggtccctacatcgtgacctgggaagccttggcttttga  
ccccctccctgggtcaagccttggtaacccctaagcctccgctcctcttctccatccgccccctcctccctctg  
aacctcctgattgcaccccgctcgtactcctccttaccagcctcactccttctctagggccccccatagggccat  
gagatcttatattggggcacccccgccttggtaacttccctgacctgacatgacaagagttactaacagccctctct  
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accgaccggtgggtacctcaccctaccgagtcggcgacacagtggtgggtccgcccagaccagactaagaacctgaacct  
cgctggaaaggaccttacacagtcctgtgaccacccccacgcctcaagttagacggcatcgcagcttggatacacgc  
cgcccagctgaaggctgccgaccccggggtggaccatcctctagactgccGGATCTCGAGGGATCTCCACAGCATGCC

TGCTATTGTCTTCCCAATCCTCCCCCTTGCTGTCTGCCCCACCCACCCCAAGAATAGAATGACACCTACTCAGACAA

TGCGATGCAATTTCTCATTTTATTAGGAAAGGACAGTGGGAGTGGCACCTTCCAGGGTCAAGGAAGGCACGGGGGAGGG

GCAAACAACAGATGGCTGGCAACTAGAAGGCACAGTCGAGGCTAGCTTGCCAAACCTACAGGTGGGGTCTTTTATTCCC

CCCTTTTCTGGAGACTAAATAAAATCTTTTATTTatcgaatagatcccggtcggcatctactctattcctttgcccctg  
gacgagtgctggggcgtcgggttccactatcggcgagtaactctacacagccatcggtccagacggccgcgtctctgcgg  
gagatttgtgtacgcccagacagtcgggtcgggacgattgctgcacatcgacctgcccgaagctgcacatc  
gaaatttcggtcaaccaagctctgtagagttgggtcaagacaaatgcggagcataacgcccggagccgcccagatcctg  
caagctccggatgcctccgctcgaagttagcgcgtctgctgctccatacaagccaacacggcctccagaagaagatgttg  
gagacctcgtattgggaatccccgaacatcgctcgtcctcagtcgaatgaccgctgttatggggccattgtccgctcaggac  
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aatcacgcatgtagtgtattgaccgattccttgcgggtccgaatgggcccgaacccgctcgtctggctaaagatcgccgc  
agcagtcgcatccatggcctccgagaccggtcgcagaacagcgggcagttcgggttccaggcaggtcttgaacgtgacac  
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ggcgatgcaaaagtcgagataaacataacgacttttgaataacacatcgggcgagctatttaccgcaggacatatccacg  
cctcctacatcgaagctgaaagcagagattccttgcctcctcagagagctgcacatcaggtcggagacgtgtcgaactttt  
cgatcagaaacttctcagacagcgtcgcggtgagttcaggcttttcatgggtattatcatcgtgttttcaaaggaaac  
cacgtccccgtgggtcggggggcctagacgtttttaaactcgaactaaacacatgtaagcatgtgcacgagggccccag  
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ttccacaactatccaactcacaacgtggcactgggggtgtgcccgccttgcaggtgtatcttatacagctggcttttgg  
ccgagaggcacctgtcgcaggtgggggggtccgctgcctgcaagggtcgctacagacgttgtttgtcttcaagaagc  
ttCCAGAGGAAGTCTCTCTCACGACATTCAACAGACCTTGCTATCTTTGGCGAGAGGGGAAAGACCctagactaga

ccaagcttttgatttctatttctgaagtttgaattttctgagtcactagtaatgtccttgaggatgatagttctgaatttt  
tctgcaagagtacaaagattggcttttttgagatctttaatcaatgtgtacacgcttcttcttccatgaagttgatg  
ccaattacgaagcagttgaacttctgttctgctgtgtcttggacattgtcattcttgcacatctattttggcttcat  
tgacacattcttgcgaacaaagcctttaacttgacttagtgcagctcagcaatagtggtgatataatttactcaag  
tcaacatcagataaaatttattgccactgtttcaggatttaaggttggagattcatgagaaccttgggttttcttctgtg  
cttctgtcatgtttctgtacttcttcttccacaaacaattagtggaattggcaaaagaagaagacaaagccacc  
ccaaccggtTTTCTGGGACTTTGTTTCTTGCAGTTTGTATTGCTGGTGTGCTGTCATGGCTCAAGGGTTCCATGTTTCACAC

GAGGCGCAGCGAACACAGTGTTCACAGCCAGGAGAATCGCAGTAGAAGTCTGGTTTGCAGTTGCACTTGGTATTCTGGGT

CAGGGTGCAGTTTGTTCCTTCTAAACCATGCTCTTCATCGCAGAGTGTGCATCTTCTGCATTATCAGCATAATGGT

TCTGTCCATGTACTCTTCCCTTCTGTGCATGGGGACAGGTGGTGTACCCCCATTCTTTGTCAGTCTCTCAACTTTT

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TTTTTACCAGGTTGGCATGGTTGACAGCAAAATGGGCCCTCTTGATATAATCCTTCTGAGCAGTTTTTTATCAGTTTATCATG  
AACCCGCTCTCAGCTTTAAACTCTCGGAGATGCTATTAGTACCTTGAGTATGAACCTCTTAACTGTGAGCCAGCAAGCA  
CCAGAGGCAGGACAGCCAGATCCACACCATgGTGGCTTTACCAACAGTACCGGAATGCCAAGCTTGCGGCCGCTTAAGA  
GCTGTAATTGAACCTGGGAGTGGACACCTGTGGAGAGAAAGGCCAAAGTGGATGTGAGTAAAGACCAATAGGTGCCTATCAG  
AAACGCAAGAGTCTTCTCTGTCTCGACAAGCCAGTTTCTATTGGTCTCCTTAAACCTGTCTGTAACTTGATACTTAC  
CTGCCCAGTGCCTCAGACCAACTTctgcaggaattcctggacagctcccagatgatcagtaaccgtggttgttatttct  
gtgcccgggagtgaggcctgggtaggggagctctgcctcagtgtcttcagctaaaaatggggtgggaaccccCaggagg  
ccggggccgcccctggaagtcccttttctctgttcttgggaagtgcattgagcaacagcgggggtcaggtgagggtcc  
ttcactaccgatgcacaccgagtgctGggggaggttctcttctctctcaggcccaacCccagggcccctgcctaggtccc  
ggactctCactcttgacgcattgcgtggcttgggtgggtcccagtcagcaaaacttgggggtcccgttgccctgggaaggagag  
ggtagtgggcatcgacgcctctgcttccacgaaagccttgtgaagaaaggatgggggcgcttctgtgcaggagaatgagg  
cgactgaggtgaactggccctcggggGcgcgtgtcccagatgtgtgtgcagggcctcctgatggccgcagccctcgctc  
ctgtgaccgcgttgagctggcaccctgagtggtggcctcacCTGTACTCACTCCCAGGTACTGTCCtcgacGCGGCC  
GCTCGAagataAAAATAAAGATTTTATTTAGTCTCCAGAAAAAGGGGGAATGAAAGACCCACCTGTAGGTTTGGCAA  
ctagcTTAAGTAACCCATTTTGAAGGCATGGAATAATACATAACTGAGAATAGAGAAGTTCAGATCAAGGTCGGAACAG  
ATGGAACAGGCAATAAAAGAGCCACAACCCCTCACTCGGGGCCAGTCCCTCCGATTGACTGAGTCGCCCCGGGTACCCG  
TGATATCCAATAAACCCCTCTTGCAGTTGCATCCGACTTGTGGTCTCGCTGTTCCCTTGGGAGGGTCTCCTCTGAGTGATTGA  
CTACCCGTCAGCGGGGTCTTTCAcatgcaGCATGTATCAAAATTAATTTGGTTTTTTTTTCTTAAAGTATTTACATTAAAT  
GGCCATagtttcGTAATCATGGTCATAGCTGTTTCTCTGTGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAG  
CCGGAAGCATAAAAGTGTAAGCCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCCGT  
TTCCAGTCGGGAAACCTGTCTGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCCTATTGGGCG  
CTCTTCCGCTTCTCTCGCTCACTGACTCGCTGCGCTCGGTCTCGCTGCGGCGAGCGGTATCAGCTCACTCAAAGCGG  
TAATACGGTTATCCACAGAATCAGGGGATAACGCGAGGAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGT  
AAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCAGAAAAATCGACGCTCAAGTCAGAG  
GTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCC  
TGCCGCTTACCGGATACCTGTCCGCCCTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCAGCTGTAGGTATCTC  
AGTTCCGTTGAGGTCTGCTCCAGCTGGGCTGTGTGCACGAACCCCCCGTTACCCCGACCGCTGCGCCTTATCCGG  
TAACTATCGTCTTGAGTCCAACCCGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAG  
CGAGGTATGTAGGCGGTGCTACAGAGTCTTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATC  
TGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAAACAAACCACCGCTGGTAGCGG  
TGGTTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGT  
CTGACGCTCAGTGGAACGAAAACCTACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTT  
TTAAATTAAAAATGAAGTTTGCAGAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAAT  
CAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCTGTTTCATCCATAGTTGCCTGACTCCCCGCTGCTGTAGATAACTACGA  
TACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCAGGCTCCAGATTATCAGCA  
ATAAACACGACCAGCCGAAGGGCCGAGCGCAGAAAGTGGTCTGCAACTTATCCGCCTCCATCCAGTCTATTAATTGTTG  
CCGGGAAGCTAGAGTAAGTAGTTCCGCCAGTTAATAGTTTGCAGAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTAC  
GCTCGTCTGTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAA  
AAAGCGGTTAGTCTCCTTCGGTCTCCGATCGTTGTCAGAAGTAAGTTGGCCGAGTGTATCACTCATGGTTATGGCAG

FIG 12C

ACTGCATAATTCTCTTACTGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGagtactcaaccaagtcattctgag

aatagtgtatgcgggcgaccgagttgctcttgcccggcggtcaacacgggataataccgcgccacatagcagaactttaaaa  
gtgctcatcattggaaaacgttcttcggggcgaaaactctcaaggatcttaccgctggtgagatccagttcgatgtaacc  
cactcgtgcacccaactgatcttcagcatcttttactttcaccagcgtttctgggtgagcaaaaacaggaaggcaaaatg  
ccgcaaaaaagggaataagggcgacacggaaatggtgaatactcatactcttcctttttcaatattattgaagcatttat  
cagggttattgtctcatgacattaacctataaaaaataggcgt

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FIG 13A

(2) Ahhhh: Survival construct

2.) Ahhhh: epsilon-cFas' (CD8 or mLy2)-Ires-Hygro-BGHpolyA also in C12s backwards

atcacgaggcccttttctgtctcaagaacagcttttgccttaggagtttqctaatacatccaaactcaaatatataaagc  
atttgacttgttctatgccctagttattaatagtaaatcaattacgggggtcattagttcatagcccatatatggagttccg  
cggtacataaacttacggtaaatggcccgcctgggtgaccgcccacgacccccgccattgacgtcaataatgacgtatg  
tcccatagtaacgccaatagggaactttccattgacgtcaattgggtggagtatttacggtaaaactgccacttggcagta  
catcaagtgtatcatatgccaagtacgccccctattgacgtcaatgacggtaaatggcccgcctggcattatgccagta  
catgaccttatgggactttctacttggcagtagatctacgtatttagtcacgtcattaccatgggtgatgggttttggc  
agtacatcaatggggtggatagcgggtttagtcacggggatttccaagtctccaccccatgacgtcaatgggagtttg  
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GTAGTTCGCCAGTTAATAGTTTGC GCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCACGCTCGTCGTTTGGTATG

FIG 13C

GCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTT  
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